Versions A

Part I
I-1 D I-2 B I-3 A I-4 D I-5 B

Part II
A) before – astronaut and space capsule together (zero velocity)
after – they go in opposite directions
B) 0.191 m/s
C) 649 N
D) 406 J
E) -325 Ns (in the direction that the astronaut moves after the push-off)

Part III
A) 6.26 m/s
B) 7.35 J
C) 4.95 m/s
D) 613 N/m

Part IV
A) diagram - cable for elevator upward, gravitational force downward
B) -9.80 x 10^4 J
C) 1.08 x 10^5 J
D) 1.00 x 10^4 J
E) 3.74 m/s